

PATENT COOPERATION TREATY

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REC'D 19 JAN 2005

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY PCT
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2020713PC/or	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/FI2002/000893	International filing date (day/month/year) 12-11-2002	Priority date (day/month/year) ---
International Patent Classification (IPC) or national classification and IPC H04L12/14, H04M15/00, H04Q7/38		
Applicant NOKIA CORPORATION ET AL		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
 - ☒ (sent to the applicant and to the International Bureau) a total of 8 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application |

Date of submission of the demand 21-08-2003	Date of completion of this report 23-12-2004
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2002/000893

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
 - ☐ the international application as originally filed/furnished
 - ☒ the description:
 - pages 1 - 12 _____ as originally filed/furnished
 - pages* _____ received by this Authority on _____
 - pages* _____ received by this Authority on _____
 - ☒ the claims:
 - pages _____ as originally filed/furnished
 - pages* _____ as amended (together with any statement) under Article 19
 - pages* 13 - 20 received by this Authority on 24 - 05 - 2004
 - pages* _____ received by this Authority on _____
 - ☒ the drawings:
 - pages 1 - 2 _____ as originally filed/furnished
 - pages* _____ received by this Authority on _____
 - pages* _____ received by this Authority on _____
 - ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages _____
 - ☐ the claims, Nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to the sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages _____
 - ☐ the claims, Nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2002/000893

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-23</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-23</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-23</u>	YES
	Claims	_____	NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1:EP1134990

D2:WO0191446

D3:EP1014619

D4:ORLAMUENDER H. ET AL.: 'Handling internet traffic in telecommunications networks' WORLD TELECOMMUNICATIONS CONGRESS. INTERNATIONAL SWITCHING SYMPOSIUM vol. 1, 21 September 1997 - 26 September 1997, TORONTO, ONT. CANADA, pages 579 - 586

The problem to be solved is to prevent a subscriber from being charged twice for a requested service, i.e. both the bearer layer and the application layer (IMS/IP Multimedia Subsystem) debit for the same service which results in double charging [see the description on page 2 lines 3-23].

D1, which is regarded as being the closest prior art, discloses an intelligent-networked telecommunication system, which prevents a customer from being billed twice for a service, i.e. both the intelligent network (IN) and another component of the system (e.g. a toll switch, special platform etc.) debit for the same service which results in double charging [see the abstract and paragraph 0011].

The solution proposed in D1 uses a service-dependent pseudo Calling Line Identifier (CLI). This CLI is used to inform the toll switch that the current IN service call has already been billed through the IN. The IN is accordingly designated as handling billing for a service/telephone transaction [see the last sentence in the abstract and paragraphs 0015 and 0028].

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of BOX V

D1 discloses a solution where a pseudo CLI is used to avoid double billing. In other words, instead of a CLI, a pseudo CLI will be sent and used for collecting charging information. The double billing is avoided since the pseudo CLI is not associated with any customer thus making the charging impossible. The pseudo CLI can be generated to identify the service, and basis of that purposefully avoid double billing. However, charging data is transmitted to both charging functions.

Main difference between the present inventions as claimed in the independent claims is that D1 teaches that charging information has to be checked in order to know whether or not to use it for billing. That is contrary to the present invention in which the first piece of information is not part of the charging information and therefore checking the charging information is not required. Thus, the present inventions solve the objective problem "how to avoid checking each piece of charging information".

The cited documents D1-D4 is considered to represent the general state of the art.

Accordingly, the invention defined in claims 1-23 is novel and is considered to involve an inventive step. The invention is industrially applicable.

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Although claims 1, 3-5, 10, 12-14, 19-23 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and/or in respect of the terminology used for the features of that subject-matter.

The aforementioned 13 independent claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

Hence, 1, 3-5, 10, 12-14, 19-23 do not meet the requirements of Article 6 PCT.

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CLAIMS

1. A method of controlling charging a service in a telecommunication system comprising at least a first layer and a second layer, both of which are usable for transmitting a service, a first layer charging function, a second layer charging function and at least one network node collecting charging data on the first layer, **characterized by**
- receiving (202) a first piece of information indicating that the first layer charging data are attended to by the second layer charging function, the first piece of information not being part of the first layer charging data; and
- transmitting (205), in response to the first piece of information, to the network node collecting first layer charging data, information in a charging instruction indicating that charging data are not transmitted to the first layer charging function.
2. A method as claimed in claim 1, **characterized by**
- waiting (203) a predetermined time for the first piece of information; and
- if the first piece of information is not received during the predetermined time, transmitting (204), to the network node collecting first layer charging data, information in a charging instruction indicating that charging data are transmitted to the first layer charging function.
3. A method of controlling charging for a service in a telecommunication system comprising at least a first layer and a second layer, both of which are usable for transmitting a service, a first layer charging function, a second layer charging function and at least one network node collecting charging data on the first layer, the method comprising:
- transmitting (302) information to the network node in a first charging instruction indicating that charging data are transmitted to the first layer charging function;
- characterized by**
- receiving (303) a first piece of information indicating that the first layer charging data are attended to by the second layer charging function, the first piece of information not being part of the first layer charging data; and
- cancelling (304) the first charging instruction in response to the first piece of information.
4. A method of controlling charging for a service in a telecommunication system comprising at least a first layer and a second layer, both of

which are usable for transmitting a service, a first layer charging function, a second layer charging function and at least one network node collecting charging data on the first layer, the method comprising:

transmitting (502) information to the network node in a first charging instruction indicating that charging data are transmitted to the first layer charging function;

characterized by

receiving (503) a first piece of information indicating that the first layer charging data are attended to by the second layer charging function, the first piece of information not being part of the first layer charging data; and ignoring (504), in response to the first piece of information, in the first layer charging function at least partly the charging data coming from the first layer.

5. A method of controlling charging for a service in a telecommunication system comprising at least a first layer and a second layer, both of which are usable for transmitting a service, a first layer charging function, a second layer charging function and at least one network node collecting charging data on the first layer, the method comprising:

transmitting (402) information to the network node in a first charging instruction indicating that charging data are transmitted to the first layer charging function;

characterized by

receiving (403) a first piece of information indicating that the first layer charging data are attended to by the second layer charging function, the first piece of information not being part of the first layer charging data; and transmitting (404), in response to the first piece of information, a second charging instruction to the network node collecting charging data.

6. A method as claimed in claim 5, **characterized** by further cancelling the first charging instruction before the transmission of the second charging instruction.

7. A method as claimed in any one of the preceding claims, **characterized** by using the method for online charging.

8. A method as claimed in any one of the preceding claims, **characterized** by the first layer being a bearer layer and the second layer an application layer.

9. A method as claimed in any one of claims 1 to 7, **character-**

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ized by the first layer being an application layer and the second layer a bearer layer.

10. A telecommunication system (1) comprising at least
a first layer (2) and a second layer (3), both of which are arranged to
5 transmit a service;

at least one network node (SGSN) arranged to collect charging data
on the first layer;

a billing domain (4) comprising at least a first layer charging function
(CF1) for controlling charging on the first layer and a second layer charging
10 function (CF2) for controlling charging on the second layer;

characterized in that

the billing domain (4) is configured to transmit, to the first layer
charging function (CF1), a first piece of information indicating that the first layer
charging data are attended to by the second layer charging function (CF2) in
15 response to the first layer charging data being attended to by the second layer
charging function, the first piece of information not being part of the first layer
charging data;

the first layer control function (CSE) is configured to receive the first
piece of information and to transmit, in response to the first piece of informa-
20 tion, to the network node (SGSN), information in a first charging instruction in-
dicating that the charging data are not transmitted to the first layer charging
function (CF1); and

the network node (SGSN) is configured not to transmit charging
data to the first layer charging function (CF1) in response to the first charging
25 instruction.

11. A telecommunication system as claimed in claim 10, **char-**
acterized in that

the first layer charging function (CF1) is configured to wait a prede-
termined time for the first piece of information and, in response to not receiving
30 the first piece of information during the predetermined time, to transmit, to the
network node (SGSN), information in a second charging instruction indicating
that the charging data are transmitted to the first layer charging function (CF1);
and

the network node (SGSN) is configured to transmit charging data to
35 the first layer charging function (CF1) in response to the second charging in-
struction.

12. A telecommunication system (1) comprising at least
a first layer (2) and a second layer (3), both of which are arranged to
transmit a service;

at least one network node (SGSN) arranged to collect charging data
5 on the first layer;
a billing domain (4) comprising at least a first layer charging function
(CF1) for controlling charging on the first layer and for transmitting a first
charging instruction to the network node, the instruction indicating that the
charging data are transmitted to the first layer charging function (CF1) and
10 a second layer charging function (CF2) for controlling charging on
the second layer;

characterized in that

the billing domain (4) is configured to transmit, to the first layer
charging function (CF1), a first piece of information indicating that the first layer
15 charging data are attended to by the second layer charging function (CF2) in
response to the first layer charging data being attended to by the second layer
charging function, the first piece of information not being part of the first layer
charging data;

the first layer charging function (CF1) is configured to receive the
20 first piece of information and, in response to the first piece of information, to
cancel the first charging instruction transmitted to the network node (SGSN);
and

the network node (SGSN) is configured not to transmit charging
data to the first layer charging function (CF1).in response to the cancellation of
25 the first charging instruction.

13. A telecommunication system (1) comprising at least
a first layer (2) and a second layer (3), both of which are arranged to
transmit a service;

at least one network node (SGSN) arranged to collect charging data
30 on the first layer;

a billing domain (4) comprising at least a first layer charging function
(CF1) for controlling charging on the first layer and for transmitting a first
charging instruction to the network node, the instruction indicating that the
charging data are transmitted to the first layer charging function (CF1) and a
35 second layer charging function (CF2) for controlling charging on the second
layer;

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characterized in that

the billing domain (4) is configured to transmit, to the first layer charging function (CF1), a first piece of information indicating that the first layer charging data are attended to by the second layer charging function (CF2) in response to the first layer charging data being attended to by the second layer charging function, the first piece of information not being part of the first layer charging data; and

the first layer charging function (CF1) is configured to receive the first piece of information and, in response to the first piece of information, to ignore at least partly the charging data received from the network node (SGSN).

14. A telecommunication system (1) comprising at least

a first layer (2) and a second layer (3), both of which are arranged to transmit a service;

at least one network node (SGSN) arranged to collect charging data on the first layer;

a billing domain (4) comprising at least a first layer charging function (CF1) for controlling charging on the first layer and for transmitting a first charging instruction to the network node, the instruction indicating that the charging data are transmitted to the first layer charging function (CF1) and a second layer charging function (CF2) for controlling charging on the second layer;

characterized in that

the billing domain (4) is configured to transmit, to the first layer charging function (CF1), a first piece of information indicating that the first layer charging data are attended to by the second layer charging function (CF2) in response to the first layer charging data being attended to by the second layer charging function, the first piece of information not being part of the first layer charging data;

the first layer charging function (CF1) is configured to receive the first piece of information and, in response to the first piece of information, to transmit a second charging instruction to the network node (SGSN); and

the network node (SGSN) is configured to replace the first charging instruction with the second charging instruction.

15. A telecommunication system (1) as claimed in claim 14, **characterized** in that the first layer charging function (CF1) is config-

ured to cancel the first charging instruction before transmitting the second charging instruction.

16. A telecommunication system as claimed in any one of claims 10 to 15, **characterized** in that

5 the billing domain (4) is configured to transmit, to the first layer charging function (CF1), as a first piece of information, information indicating whether or not the first layer charging data are attended to by the second layer charging function (CF2) in response to the second layer charging function having received a request associated with charging control; and

10 the first layer charging function (CF1) is configured to check the information and to interpret it as the first piece of information only if the information indicates that the first layer charging data are attended to by the second layer charging function.

17. A telecommunication system as claimed in any one of claims 10 to 16, **characterized** in that the second layer charging function (CF2) is configured to send the first piece of information.

18. A telecommunication system as claimed in any one of claims 10 to 16, **characterized** in that the billing domain (4) further comprises a correlation function (CoF) which is configured to send the first piece of information.
20 tion.

19. A network node (CF1) in a telecommunication system comprising at least a first layer and a second layer, both of which are usable for transmitting a service, the network node comprising at least control means for controlling the first layer charging, **characterized** in that

25 the network node (CF1) further comprises reception means for receiving a first piece of information indicating that the first layer charging data are attended to by a second layer, the first piece of information not being part of the first layer charging data; and

the control means are arranged to be responsive to the reception
30 means and, in response to the first piece of information, to transmit, to a network node collecting charging data in the first layer, in a first charging instruction, information indicating that the charging data are not transmitted to the first layer charging function.

20. A network node (CF1) in a telecommunication system comprising at least a first layer and a second layer, both of which are usable for transmitting a service, the network node comprising at least control means for con-
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trolling the first layer charging and, in response to a request associated with controlling of the first layer charging, for transmitting a first charging instruction to a network node collecting charging data in the first layer, the instruction indicating that the charging data are transmitted to the first layer charging function,

5 **characterized** in that

the network node (CF1) further comprises reception means for receiving a first piece of information indicating that the first layer charging data are attended to by the second layer, the first piece of information not being part of the first layer charging data; and

10 the control means are arranged to be responsive to the reception means and to cancel the first charging instruction transmitted to the network node collecting charging data in the first layer.

21. A network node (CF1) in a telecommunication system comprising at least a first layer and a second layer, both of which are usable for transmitting a service, the network node comprising at least control means for controlling the first layer charging and, in response to a request associated with controlling of the first layer charging, for transmitting a first charging instruction to a network node collecting charging data in the first layer, the instruction indicating that the charging data are transmitted to the first layer charging function,

20 **characterized** in that

the network node (CF1) further comprises reception means for receiving a first piece of information indicating that the first layer charging data are attended to by the second layer, the first piece of information not being part of the first layer charging data; and

25 the control means are arranged to be responsive to the reception means and to give an instruction to a first layer charging means to ignore at least partly the charging data received from the network node collecting the charging data.

30 22. A network node (CF1) in a telecommunication system comprising at least a first layer and a second layer, both of which are usable for transmitting a service, the network node comprising at least control means for controlling the first layer charging and, in response to a request associated with controlling of the first layer charging, for transmitting a first charging instruction to a network node collecting charging data in the first layer, the instruction indicating that the charging data are transmitted to the first layer charging function,
35 **characterized** in that

the network node (CF1) further comprises reception means for receiving a first piece of information indicating that the first layer charging data are attended to by the second layer, the first piece of information not being part of the first layer charging data; and

- 5 the control means are arranged to be responsive to the reception means and to transmit a second charging instruction replacing the first charging instruction to the network node (collecting charging data in the first network layer.

23. A network node (CF2) in a telecommunication system comprising at least a first layer and a second layer, both of which are usable for transmitting a service, **characterized** in that

- the network node is configured to send to a charging function of the first layer a first piece of information indicating that first layer charging data are attended to by the second layer in response to the first layer charging data being attended to by the second layer, the first piece of information not being part of the first layer charging data.